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| EXAMINER | |
|---|---|
| ALHIJA, SAIF A | |

| ART UNIT | PAPER NUMBER |
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| 2128 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/812,935 | OBA ET AL. | |
| | Examiner | Art Unit | |
| | SAIF A. ALHIJA | 2128 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *17 December 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## ***DETAILED ACTION***

**1.** Claims 1-11 have been presented for examination.

Claims 12-51 have been withdrawn in response to the restriction dated 4 June 2007.

## ***PRIORITY***

**2.** Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d).

## ***Response to Arguments***

**3.** Applicant's arguments filed 17 December 2007 have been fully considered but they are not persuasive.

**NON-PRIOR ART ARGUMENTS**

i) Applicant argues the 101 rejections of claims 1-11. The Examiner notes that "new design data" argued by Applicants does not constitute a useful, concrete, and tangible result. Specifically "new design data" as presented in the claims is neither concrete nor tangible. Appropriate correction is required and the 101 rejections are maintained.

ii) Applicants argue that the amended claims overcome the previously presented 112 2nd rejections. The Examiner notes that the 112 2nd rejection of claim 11 has not been addressed and is therefore maintained. The previous 112 2nd rejections, not including those for claim 11, are withdrawn and an additional 112 2nd rejection has been provided below.

**PRIOR ART ARGUMENTS**

iii) Applicants argue that the reference does not disclose a **"maintaining region"** and a **"transformation region."** The Examiner notes that based on the broadest reasonable interpretation of these terms the shape deformation shown for example in Figures 6 and 7 of the reference teaches the claimed limitations. Applicants argue a **"maintaining region"** which does not change its shape which is akin to the region surrounding the cube/sphere/etc shown in Figure 6 and the **"transformation region"** which transforms its shape akin to the cube/sphere/etc itself. Node displacement can be seen in the shape transformation of the cube into a cylinder, cylinder into cone, etc. It is unclear how the shape transformation in the reference does not anticipate the shape transformation of the claims. Applicants have merely recited certain phrases of the reference such as **"interactive editing"** and **"shape-dependent transformation"** and then argue that the reference does not teach.

Applicant's arguments are unpersuasive because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references. Applicant's arguments are further unpersuasive because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

iv) Applicants argue that the reference does not disclose **"a node located at a boundary between the transformation region and the maintaining region**." The Examiner notes that based on the broadest reasonable interpretation of these term the node can be seen in the reference in for example Figure 1 where the corners of the square are being transformed. The points of transformation represent a node at a boundary between the **"transformation region"** which is the square itself and the **"maintaining region"** which is the region surrounding the square. See Section 3.iii above as well.

v) Applicants argue that the reference does not disclose a **"transformation instruction vector."** Applicants argue that the claimed vector constitutes a direction and amount of transformation rather than the gradient of a function as defined in the reference. The vector cited is part of section 4.3 of the reference which ends by stating **"In order to exert control on the shape of a deformed object..."** A transformation vector with a direction and amount of transformation can be seen in the reference in for example Figure 1 where the corners of the square are being transformed by a direction and amount.

vi) Applicants appear to be reading further limitations into the claims with respect to phrases such as **"maintaining region"** and **"transformation instruction vector"** and **"node".** The Examiner respectfully notes that he must take the broadest most reasonable interpretation of the claims when determining the metes and bounds of the claims. As such the claims as presented are anticipated by the reference and the prior art rejections are maintained.

**EXAMINERS NOTE**

vii) Examiner has cited particular columns and line numbers in the references applied to the claims for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is

respectfully requested from the applicant in preparing responses, to fully consider the references in their entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

viii) The Examiner respectfully requests, in the event the Applicants choose to amend or add new claims, that such claims and their limitations be directly mapped to the specification, which provides support for the subject matter. This will assist in expediting compact prosecution.

ix) Further, the Examiner respectfully encourages Applicants to direct the specificity of their response with regards to this office action to the broadest reasonable interpretation of the claims as presented. This will avoid issues that would delay prosecution such as limitations not explicitly presented in the claims, intended use statements that carry no patentable weight, mere allegations of patentability, and novelty that is not clearly expressed.

***Claim Rejections – 35 USC § 101***

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

**MPEP 2106 recites:**

The claimed invention as a whole must accomplish a practical application. That is, it must produce a "useful, concrete and tangible result'' State Street 149 F.3d at 1373, 47 USPQ2d at 1601-02. A process that consists solely of the manipulation of an abstract idea is not concrete or tangibles. See In re Warmerdam, 33 F.3d 1354, 1360, 31 USPQ2d 1754, 1759 (Fed.Cir. 1994). See also Schrader, 22 F.3d at 295, 30 USPQ2d at 1459.

**4. Claims 1-11 are rejected** under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

i) The claims recite shape transformations and design data and as such do not produce a useful, concrete, and tangible result. The claims appear to be directed to a CAD environment however as presented they appear to be merely an abstract idea as well as mere data manipulation.

Appropriate correction is required.

All claims dependent upon a rejected base claim are rejected by virtue of their dependency.

***Claim Rejections – 35 USC § 112***

**The following is a quotation of the second paragraph of 35 U.S.C. 112:**

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**5. Claims 2-4 and 6-11 are rejected** under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

i) Claim 2 recites "adds the auxiliary shape to the new base shape." It is unclear what is meant by adding a shape in the context of the claims and therefore the claim is rendered vague and indefinite. This further applies to claim 6. More specifically how is a shape added to another shape? The metes and bounds of this limitation cannot be properly ascertained.

ii) Claim 11 recites an "allowable angle." It is unclear what encompasses an allowable angle or how allowability is determined. This renders the claim vague and indefinite.

Appropriate correction is required.

All claims dependent upon a rejected base claim are rejected by virtue of their dependency.

***Claim Rejections – 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**6. Claims 1-11 are rejected** under 35 U.S.C. 102(b) as being clearly anticipated by **Borrel et al. "Deformation of n-dimensional objects."**

**Regarding Claim 1:**

**The reference discloses** A design data generating apparatus for generating new design data of an article by performing a shape transformation process with respect to design data of the article which has been already generated, the apparatus comprising:

an input device for receiving transformation instructions from an operator; **(Page 351, Introduction, interactive editing)** and

a transformation processing device for performing an operation of the design data in accordance with the transformation instructions which are input, **(Page 351, Introduction, shape-dependent transformations)** wherein

the input device receives input for designation of a shape attribute of the article between of a transformation region for which the shape transformation process is to be performed and a maintaining region which maintains its shape, and input of a transformation instruction vector which is defined by a direction and an amount of transformation with respect to the article, **(Interpreted to be shape deformation. Section 2.1-2.2, and 2.3.1-2.3.3)**

the transformation processing device does not displace a node located at a boundary between the transformation region and the maintaining region, and displaces a node belonging only to the transformation region in accordance with the input transformation instruction vector. **(Section 2.1, point displacement. Section 2.2, intermediate space)**

**Regarding Claim 2:**

**The reference discloses** An apparatus according to claim 1, wherein the shape of the article is composed of a base shape and an auxiliary shape, and the transformation processing device performs a transformation process only with respect to the base shape thereby generating a new base shape, and adds the auxiliary shape to the new base shape by an auxiliary shape adding device. **(Section 5.2, shape adjustment)**

**Regarding Claim 3:**

**The reference discloses** An apparatus according to claim 1, wherein the input received by the input device from the operator includes instructions for an operative node of the transformation instruction vector. **(Section 4.3.2.1, user modification utilizing vectors)**

**Regarding Claim 4:**

**The reference discloses** An apparatus according to claim 3, wherein the instructions for an operative node of the transformation instruction vector include point designation concerning a single node, line designation concerning a line connecting nodes, and plane designation concerning a plane enclosed by nodes. **(Page 351, Introduction, 2D, 3D, and 4D)**

**Regarding Claim 5:**

**The reference discloses** A design data generating method for generating new design data of an article by performing a shape transformation process with respect to design data of the article which has been already generated, the method comprising:

a region attribute input step of receiving, from an operator, input for designating a shape attribute of the article between a transformation region for which the shape transformation process is to be performed and a maintaining region which maintains its shape; **(Page 351, Introduction, interactive editing and shape-dependent transformations)**

a transformation instruction input step of receiving, from the operator, a transformation instruction vector which is defined by a direction and an amount of transformation with respect to the article, **(Interpreted to be shape deformation. Section 2.1-2.2, and 2.3.1-2.3.3)** and

a shape transformation processing step of performing a displacement process with respect to a node of a shape element in accordance with the transformation instruction vector which is input, a node located at a boundary between the transformation region and the maintaining region not being displaced and a node belonging only to the transformation region being displaced in accordance with the input transformation vector. **(Section 2.1, point**

**displacement. Section 2.2, intermediate space)**

**Regarding Claim 6:**

**The reference discloses** A method according to claim 5, wherein the shape of the article is composed of a base shape and an auxiliary shape, and a transformation process is performed only with respect to the base shape, thereby generating a new base shape and the auxiliary shape is added to the new base shape by an auxiliary shape adding device. **(Section 5.2, shape adjustment)**

**Regarding Claim 7:**

**The reference discloses** A method according to claim 5, wherein in the shape transformation processing step,

(1) the transformation region is subdivided into a plurality of shape elements; **(Section 3.4.1, Right Column, Two Deformations starting with "This function f can….")** and

(2) displacement of a node which defines the shape of the shape elements is performed, wherein when a node is located on a single bending line of an article **(e.g. 2D, 3D, and 4d shapes)** , the node is displaced in the extending direction of the bending line and by an amount corresponding to a component of the input transformation vector **(e.g. merely shape deformation and transformation)** in the extending direction of the bending line, when a node is located on the intersection of a plurality of bending lines of an article, the node is displaced in the extending direction of the bending line which forms the smallest angle **(e.g. Section 3.5.1 B-Spline)** with respect to the transformation vector and by an amount corresponding to a component of the input transformation vector in the extending direction of the bending line **(e.g. extension of a corner)**, and when a node is not located on the bending line of a article, the node is displaced in accordance with a vector obtained by projecting the transformation instruction vector onto an extension plane of an article shape plane at that node. **(Section 3.4.1, Right Column, Two Deformations and corresponding description)**

**Regarding Claim 8:**

**The reference discloses** A method according to claim 5, wherein in the transformation instruction input step, the input received by the input device from the operator includes instructions for an operative node of the transformation instruction vector. **(Section 4.3.2.1, user modification utilizing vectors)**

**Regarding Claim 9:**

**The reference discloses** A method according to claim 8, wherein the instructions for the operative node of the transformation instruction vector include point designation concerning a single node, line designation concerning a line connecting nodes, and plane designation concerning a plane enclosed by nodes. **(Page 351, Introduction, 2D, 3D, and 4D)**

**Regarding Claim 10:**

**The reference discloses** A method according to claim 5, wherein in the shape transformation processing step, when an edge line connecting nodes of the transformation region is to extend beyond a node belonging to the boundary between the maintaining region and the transformation region as a result of node displacement in accordance with the transformation instruction vector input by the operator,

(1) the transformation instruction vector input by the operator is divided into a first transformation instruction vector which terminates where the edge line connecting nodes in the transformation region reaches a node in the maintaining region and a second transformation instruction vector which starts where the edge line connecting the nodes in the transformation region reaches the node in the maintaining region; **(Interpreted to be shape transformation within a shape. Section 3.4.1, Right Column, Two Deformations and corresponding description. See also Section 2.2, intermediate space)**

(2) a shape transformation process in accordance with the first transformation instruction vector is performed only with respect to the transformation region which is designated by the operator; **(Interpreted to be shape deformation based on user interaction. Section 3.4.1, Right Column, Two Deformations and corresponding description. See also Section 4.3.2.1, user modification utilizing vectors)**

(3) the attribute of the maintaining region including the node which contacts the edge line of the transformation region is reallocated as the attribute of the transformation region; **(Interpreted to be shape**

**transformation within a shape. Section 3.4.1, Right Column, Two Deformations and corresponding description. See also Section 2.2, intermediate space. See also Section 4.3.2.1, user modification utilizing vectors)**

and

(4) a shape transformation process in accordance with the second transformation instruction vector is performed with respect to the transformation region, including the reallocated transformation region, of the article shape which has been subjected to the transformation process in accordance with the first transformation instruction vector. **(Interpreted to be shape deformation based on user interaction. Section 3.4.1, Right Column, Two Deformations and corresponding description)**

**Regarding Claim 11:**

**The reference discloses** A method according to claim 10, wherein in the transformation instruction input step, the input includes an allowable angle between the transformation instruction vector and the article bending line, wherein in the shape transformation processing step, a node for which the angle formed by the transformation instruction vector and the bending line is less than the allowable angle is displaced in the extending direction of the bending line, and a node for which the angle formed by the transformation instruction vector and the bending line is equal to or greater than the allowable angle is displaced in accordance with the transformation vector. **(Interpreted to be corner transformation. Section 3.5.1, B-Spline functions)**

## ***Conclusion***

**7.** Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee

pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

**8.** All Claims are rejected.

**9.** Any inquiry concerning this communication or earlier communications from the examiner should be directed to SAIF A. ALHIJA whose telephone number is (571)272-8635. The examiner can normally be reached on M-F, 11:00-7:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on (571) 272-22792279. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. *Informal or draft communication, please label PROPOSED or DRAFT*, can be additionally sent to the Examiners fax phone number, (571) 273-8635.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SAA

March 26, 2008

/Kamini S Shah/

Supervisory Patent Examiner, Art Unit 2128